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<110> Human Genome Sciences, Inc.

<120> Albumin Fusion Proteins

<130> PF548PCT

<140> Unassigned

<141> 2001-04-12

<150> 60/229,358

<151> 2000-04-12

<150> 60/256,931

<151> 2000-12-21

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<170> PatentIn Ver. 2.1

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1 5 10 15

Ile Ser Ala Asp Ala His Lys Ser
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63

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gaa aat ttc aaa gcc ttg gtg ttg att gcc ttt gct cag tat ctt cag	96
Glu Asn Phe Lys Ala Leu Val Leu Ile Ala Phe Ala Gln Tyr Leu Gln	
20 25 30	
cag tgt cca ttt gaa gat cat gta aaa tta gtg aat gaa gta act gaa	144
Gln Cys Pro Phe Glu Asp His Val Lys Leu Val Asn Glu Val Thr Glu	
35 40 45	
ttt gca aaa aca tgt gtt gct gat gag tca gct gaa aat tgt gac aaa	192
Phe Ala Lys Thr Cys Val Ala Asp Glu Ser Ala Glu Asn Cys Asp Lys	
50 55 60	
tca ctt cat acc ctt ttt gga gac aaa tta tgc aca gtt gca act ctt	240
Ser Leu His Thr Leu Phe Gly Asp Lys Leu Cys Thr Val Ala Thr Leu	
65 70 75 80	
cgt gaa acc tat ggt gaa atg gct gac tgc tgt gca aaa caa gaa cct	288
Arg Glu Thr Tyr Gly Glu Met Ala Asp Cys Cys Ala Lys Gln Glu Pro	
85 90 95	
gag aga aat gaa tgc ttc ttg caa cac aaa gat gac aac cca aac ctc	336
Glu Arg Asn Glu Cys Phe Leu Gln His Lys Asp Asp Asn Pro Asn Leu	
100 105 110	
ccc cga ttg gtg aga cca gag gtt gat gtg atg tgc act gct ttt cat	384
Pro Arg Leu Val Arg Pro Glu Val Asp Val Met Cys Thr Ala Phe His	
115 120 125	
gac aat gaa gag aca ttt ttg aaa aaa tac tta tat gaa att gcc aga	432
Asp Asn Glu Glu Thr Phe Leu Lys Lys Tyr Leu Tyr Glu Ile Ala Arg	
130 135 140	
aga cat cct tac ttt tat gcc ccg gaa ctc ctt ttc ttt gct aaa agg	480

Arg	His	Pro	Tyr	Phe	Tyr	Ala	Pro	Glu	Leu	Leu	Phe	Phe	Ala	Lys	Arg	
145					150					155					160	
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Tyr	Lys	Ala	Ala	Phe	Thr	Glu	Cys	Cys	Gln	Ala	Ala	Asp	Lys	Ala	Ala	
				165					170					175		
tgc	ctg	ttg	cca	aag	ctc	gat	gaa	ctt	cgg	gat	gaa	ggg	aag	gct	tcg	576
Cys	Leu	Leu	Pro	Lys	Leu	Asp	Glu	Leu	Arg	Asp	Glu	Gly	Lys	Ala	Ser	
			180					185					190			
tct	gcc	aaa	cag	aga	ctc	aaa	tgt	gcc	agt	ctc	caa	aaa	ttt	gga	gaa	624
Ser	Ala	Lys	Gln	Arg	Leu	Lys	Cys	Ala	Ser	Leu	Gln	Lys	Phe	Gly	Glu	
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aga	gct	ttc	aaa	gca	tgg	gca	gtg	gct	cgc	ctg	agc	cag	aga	ttt	ccc	672
Arg	Ala	Phe	Lys	Ala	Trp	Ala	Val	Ala	Arg	Leu	Ser	Gln	Arg	Phe	Pro	
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aaa	gct	gag	ttt	gca	gaa	gtt	tcc	aag	tta	gtg	aca	gat	ctt	acc	aaa	720
Lys	Ala	Glu	Phe	Ala	Glu	Val	Ser	Lys	Leu	Val	Thr	Asp	Leu	Thr	Lys	
225					230					235				240		
gtc	cac	acg	gaa	tgc	tgc	cat	gga	gat	ctg	ctt	gaa	tgt	gct	gat	gac	768
Val	His	Thr	Glu	Cys	Cys	His	Gly	Asp	Leu	Leu	Glu	Cys	Ala	Asp	Asp	
				245					250					255		
agg	gcg	gac	ctt	gcc	aag	tat	atc	tgt	gaa	aat	cag	gat	tcg	atc	tcc	816
Arg	Ala	Asp	Leu	Ala	Lys	Tyr	Ile	Cys	Glu	Asn	Gln	Asp	Ser	Ile	Ser	
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agt	aaa	ctg	aag	gaa	tgc	tgt	gaa	aaa	cct	ctg	ttg	gaa	aaa	tcc	cac	864
Ser	Lys	Leu	Lys	Glu	Cys	Cys	Glu	Lys	Pro	Leu	Leu	Glu	Lys	Ser	His	
		275					280					285				
tgc	att	gcc	gaa	gtg	gaa	aat	gat	gag	atg	cct	gct	gac	ttg	cct	tca	912
Cys	Ile	Ala	Glu	Val	Glu	Asn	Asp	Glu	Met	Pro	Ala	Asp	Leu	Pro	Ser	
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tta	gct	gct	gat	ttt	gtt	gaa	agt	aag	gat	gtt	tgc	aaa	aac	tat	gct	960
Leu	Ala	Ala	Asp	Phe	Val	Glu	Ser	Lys	Asp	Val	Cys	Lys	Asn	Tyr	Ala	
305					310					315					320	
gag	gca	aag	gat	gtc	ttc	ctg	ggc	atg	ttt	ttg	tat	gaa	tat	gca	aga	1008
Glu	Ala	Lys	Asp	Val	Phe	Leu	Gly	Met	Phe	Leu	Tyr	Glu	Tyr	Ala	Arg	
				325					330					335		
agg	cat	cct	gat	tac	tct	gtc	gtg	ctg	ctg	ctg	aga	ctt	gcc	aag	aca	1056
Arg	His	Pro	Asp	Tyr	Ser	Val	Val	Leu	Leu	Leu	Arg	Leu	Ala	Lys	Thr	
			340					345					350			

tat gaa acc act cta gag aag tgc tgt gcc gct gca gat cct cat gaa	1104
Tyr Glu Thr Thr Leu Glu Lys Cys Cys Ala Ala Ala Asp Pro His Glu	
355 360 365	
tgc tat gcc aaa gtg ttc gat gaa ttt aaa cct ctt gtg gaa gag cct	1152
Cys Tyr Ala Lys Val Phe Asp Glu Phe Lys Pro Leu Val Glu Glu Pro	
370 375 380	
cag aat tta atc aaa caa aac tgt gag ctt ttt gag cag ctt gga gag	1200
Gln Asn Leu Ile Lys Gln Asn Cys Glu Leu Phe Glu Gln Leu Gly Glu	
385 390 395 400	
tac aaa ttc cag aat gcg cta tta gtt cgt tac acc aag aaa gta ccc	1248
Tyr Lys Phe Gln Asn Ala Leu Leu Val Arg Tyr Thr Lys Lys Val Pro	
405 410 415	
caa gtg tca act cca act ctt gta gag gtc tca aga aac cta gga aaa	1296
Gln Val Ser Thr Pro Thr Leu Val Glu Val Ser Arg Asn Leu Gly Lys	
420 425 430	
gtg ggc agc aaa tgt tgt aaa cat cct gaa gca aaa aga atg ccc tgt	1344
Val Gly Ser Lys Cys Cys Lys His Pro Glu Ala Lys Arg Met Pro Cys	
435 440 445	
gca gaa gac tat cta tcc gtg gtc ctg aac cag tta tgt gtg ttg cat	1392
Ala Glu Asp Tyr Leu Ser Val Val Leu Asn Gln Leu Cys Val Leu His	
450 455 460	
gag aaa acg cca gta agt gac aga gtc aca aaa tgc tgc aca gag tcc	1440
Glu Lys Thr Pro Val Ser Asp Arg Val Thr Lys Cys Cys Thr Glu Ser	
465 470 475 480	
ttg gtg aac agg cga cca tgc ttt tca gct ctg gaa gtc gat gaa aca	1488
Leu Val Asn Arg Arg Pro Cys Phe Ser Ala Leu Glu Val Asp Glu Thr	
485 490 495	
tac gtt ccc aaa gag ttt aat gct gaa aca ttc acc ttc cat gca gat	1536
Tyr Val Pro Lys Glu Phe Asn Ala Glu Thr Phe Thr Phe His Ala Asp	
500 505 510	
ata tgc aca ctt tct gag aag gag aga caa atc aag aaa caa act gca	1584
Ile Cys Thr Leu Ser Glu Lys Glu Arg Gln Ile Lys Lys Gln Thr Ala	
515 520 525	
ctt gtt gag ctt gtg aaa cac aag ccc aag gca aca aaa gag caa ctg	1632
Leu Val Glu Leu Val Lys His Lys Pro Lys Ala Thr Lys Glu Gln Leu	
530 535 540	
aaa gct gtt atg gat gat ttc gca gct ttt gta gag aag tgc tgc aag	1680
Lys Ala Val Met Asp Asp Phe Ala Ala Phe Val Glu Lys Cys Cys Lys	
545 550 555 560	

gct gac gat aag gag acc tgc ttt gcc gag gag ggt aaa aaa ctt gtt 1728
 Ala Asp Asp Lys Glu Thr Cys Phe Ala Glu Glu Gly Lys Lys Leu Val
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 35 40 45
 Phe Ala Lys Thr Cys Val Ala Asp Glu Ser Ala Glu Asn Cys Asp Lys
 50 55 60
 Ser Leu His Thr Leu Phe Gly Asp Lys Leu Cys Thr Val Ala Thr Leu
 65 70 75 80
 Arg Glu Thr Tyr Gly Glu Met Ala Asp Cys Cys Ala Lys Gln Glu Pro
 85 90 95
 Glu Arg Asn Glu Cys Phe Leu Gln His Lys Asp Asp Asn Pro Asn Leu
 100 105 110
 Pro Arg Leu Val Arg Pro Glu Val Asp Val Met Cys Thr Ala Phe His
 115 120 125
 Asp Asn Glu Glu Thr Phe Leu Lys Lys Tyr Leu Tyr Glu Ile Ala Arg
 130 135 140
 Arg His Pro Tyr Phe Tyr Ala Pro Glu Leu Leu Phe Phe Ala Lys Arg
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 Tyr Lys Ala Ala Phe Thr Glu Cys Cys Gln Ala Ala Asp Lys Ala Ala
 165 170 175
 Cys Leu Leu Pro Lys Leu Asp Glu Leu Arg Asp Glu Gly Lys Ala Ser
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Ser	Ala	Lys	Gln	Arg	Leu	Lys	Cys	Ala	Ser	Leu	Gln	Lys	Phe	Gly	Glu		
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Arg	Ala	Phe	Lys	Ala	Trp	Ala	Val	Ala	Arg	Leu	Ser	Gln	Arg	Phe	Pro		
		210				215					220						
Lys	Ala	Glu	Phe	Ala	Glu	Val	Ser	Lys	Leu	Val	Thr	Asp	Leu	Thr	Lys		
225					230					235					240		
Val	His	Thr	Glu	Cys	Cys	His	Gly	Asp	Leu	Leu	Glu	Cys	Ala	Asp	Asp		
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Arg	Ala	Asp	Leu	Ala	Lys	Tyr	Ile	Cys	Glu	Asn	Gln	Asp	Ser	Ile	Ser		
			260					265					270				
Ser	Lys	Leu	Lys	Glu	Cys	Cys	Glu	Lys	Pro	Leu	Leu	Glu	Lys	Ser	His		
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Cys	Ile	Ala	Glu	Val	Glu	Asn	Asp	Glu	Met	Pro	Ala	Asp	Leu	Pro	Ser		
	290					295					300						
Leu	Ala	Ala	Asp	Phe	Val	Glu	Ser	Lys	Asp	Val	Cys	Lys	Asn	Tyr	Ala		
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Glu	Ala	Lys	Asp	Val	Phe	Leu	Gly	Met	Phe	Leu	Tyr	Glu	Tyr	Ala	Arg		
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Arg	His	Pro	Asp	Tyr	Ser	Val	Val	Leu	Leu	Leu	Arg	Leu	Ala	Lys	Thr		
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Tyr	Glu	Thr	Thr	Leu	Glu	Lys	Cys	Cys	Ala	Ala	Ala	Asp	Pro	His	Glu		
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Cys	Tyr	Ala	Lys	Val	Phe	Asp	Glu	Phe	Lys	Pro	Leu	Val	Glu	Glu	Pro		
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Gln	Asn	Leu	Ile	Lys	Gln	Asn	Cys	Glu	Leu	Phe	Glu	Gln	Leu	Gly	Glu		
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Tyr	Lys	Phe	Gln	Asn	Ala	Leu	Leu	Val	Arg	Tyr	Thr	Lys	Lys	Val	Pro		
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Gln	Val	Ser	Thr	Pro	Thr	Leu	Val	Glu	Val	Ser	Arg	Asn	Leu	Gly	Lys		
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Val	Gly	Ser	Lys	Cys	Cys	Lys	His	Pro	Glu	Ala	Lys	Arg	Met	Pro	Cys		
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Ala	Glu	Asp	Tyr	Leu	Ser	Val	Val	Leu	Asn	Gln	Leu	Cys	Val	Leu	His		
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Glu	Lys	Thr	Pro	Val	Ser	Asp	Arg	Val	Thr	Lys	Cys	Cys	Thr	Glu	Ser	465	470	475	480
Leu	Val	Asn	Arg	Arg	Pro	Cys	Phe	Ser	Ala	Leu	Glu	Val	Asp	Glu	Thr	485	490	495	
Tyr	Val	Pro	Lys	Glu	Phe	Asn	Ala	Glu	Thr	Phe	Thr	Phe	His	Ala	Asp	500	505	510	
Ile	Cys	Thr	Leu	Ser	Glu	Lys	Glu	Arg	Gln	Ile	Lys	Lys	Gln	Thr	Ala	515	520	525	
Leu	Val	Glu	Leu	Val	Lys	His	Lys	Pro	Lys	Ala	Thr	Lys	Glu	Gln	Leu	530	535	540	
Lys	Ala	Val	Met	Asp	Asp	Phe	Ala	Ala	Phe	Val	Glu	Lys	Cys	Cys	Lys	545	550	555	560
Ala	Asp	Asp	Lys	Glu	Thr	Cys	Phe	Ala	Glu	Glu	Gly	Lys	Lys	Leu	Val	565	570	575	
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sites in pPPC0007

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 of the Therapeutic Protein

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of the Therapeutic Protein

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<222> (24)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (25)
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<220>
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<222> (26)
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<222> (27)
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<220>
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<220>
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<220>
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<222> (32)
<223> n equals a,t,g, or c

<220>
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<222> (33)
<223> n equals a,t,g, or c

<400> 27
aggagcgtcg acaaaagann nnnnnnnnnn nnn

33

<210> 28
<211> 52
<212> DNA
<213> Artificial Sequence

<220>
<221> primer_bind
<223> reverse primer useful for generation of albumin
fusion protein in which the albumin moiety is c-terminal of
the Therapeutic Protein

<220>
<221> misc feature
<222> (38)
<223> n equals a,t,g, or c

<220>
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<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (42)

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<221> misc feature

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<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (51)

<223> n equals a,t,g, or c

<220>
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 <222> (52)
 <223> n equals a,t,g, or c

 <400> 28
 ctttaaatacg atgagcaacc tcactcttgt gtgcatcnnn nnnnnnnnnn nn 52

<210> 29
 <211> 24
 <212> PRT
 <213> Artificial Sequence

<220>
 <221> signal
 <223> signal peptide of natural human serum albumin protein

<400> 29
 Met Lys Trp Val Ser Phe Ile Ser Leu Leu Phe Leu Phe Ser Ser Ala
 1 5 10 15

Tyr Ser Arg Ser Leu Asp Lys Arg
 20

<210> 30
 <211> 114
 <212> DNA
 <213> Artificial Sequence

<220>
 <221> primer_bind
 <223> forward primer useful for generation of PC4:HSA
 albumin fusion VECTOR

<220>
 <221> misc_feature
 <222> (5)..(10)
 <223> BamHI restriction site

<220>
 <221> misc_feature
 <222> (11)..(16)
 <223> Hind III restriction site

<220>
 <221> misc_feature
 <222> (17)..(27)
 <223> Kozak sequence

<220>
 <221> misc_feature
 <222> (25)..(97)
 <223> cds natural signal sequence of human serum albumin

<220>
 <221> misc_feature
 <222> (75)..(81)
 <223> XhoI restriction site

<220>
 <221> misc_feature
 <222> (98)..(114)
 <223> cds first six amino acids of human serum albumin

<400> 30
 tcagggatcc aagcttccgc caccatgaag tgggtaacct ttatttcctc tctttttctc 60
 tttagctcgg ctactcgag ggggtgtgtt cgtcgagatg cacacaagag tgag 114

<210> 31
 <211> 43
 <212> DNA
 <213> Artificial Sequence

<220>
 <221> primer_bind
 <223> reverse primer useful for generation of
 PC4:HSA albumin fusion VECTOR

<220>
 <221> misc_feature
 <222> (6)..(11)
 <223> Asp718 restriction site

<220>
 <221> misc_feature
 <222> (12)..(17)
 <223> EcoRI restriction site

<220>
 <221> misc_feature
 <222> (15)..(17)
 <223> reverse complement of stop codon

<220>
 <221> misc_feature
 <222> (18)..(25)
 <223> AscI restriction site

<220>
 <221> misc_feature
 <222> (18)..(43)
 <223> reverse complement of DNA sequence encoding last 9 amino acids

 <400> 31
 gcagcgggtac cgaattcggc ggcgccttata agcctaaggc agc 43

 <210> 32
 <211> 46
 <212> DNA
 <213> Artificial Sequence

 <220>
 <221> primer_bind
 <223> forward primer useful for inserting Therapeutic
 protein into pC4:HSA vector

 <220>
 <221> misc feature
 <222> (29)
 <223> n equals a,t,g, or c

 <220>
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 <223> n equals a,t,g, or c

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 <222> (32)
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 <222> (33)
 <223> n equals a,t,g, or c

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 <223> n equals a,t,g, or c

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<223> n equals a,t,g, or c

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<221> misc feature

<222> (36)

<223> n equals a,t,g, or c

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<221> misc feature

<222> (37)

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<221> misc feature

<222> (38)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (39)

<223> n equals a,t,g, or c

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<222> (40)

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<222> (41)

<223> n equals a,t,g, or c

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<222> (42)

<223> n equals a,t,g, or c

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<222> (43)

<223> n equals a,t,g, or c

<220>

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<222> (44)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (45)

<223> n equals a,t,g, or c

<220>
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 <222> (46)
 <223> n equals a,t,g, or c

 <400> 32
 ccgccgctcg aggggtgtgt ttcgtcgann nnnnnnnnnn nnnnnn

 <210> 33
 <211> 55
 <212> DNA
 <213> Artificial Sequence

 <220>
 <221> primer_bind
 <223> reverse primer useful for inserting Therapeutic
 protein into pC4:HSA vector

 <220>
 <221> misc feature
 <222> (38)
 <223> n equals a,t,g, or c

 <220>
 <221> misc feature
 <222> (39)
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 <222> (41)
 <223> n equals a,t,g, or c

 <220>
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 <222> (42)
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 <220>
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 <222> (43)
 <223> n equals a,t,g, or c

 <220>
 <221> misc feature

46

<222> (44)
<223> n equals a,t,g, or c

<220>
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<222> (45)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (46)
<223> n equals a,t,g, or c

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<221> misc feature
<222> (47)
<223> n equals a,t,g, or c

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<221> misc feature
<222> (48)
<223> n equals a,t,g, or c

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<221> misc feature
<222> (49)
<223> n equals a,t,g, or c

<220>
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<222> (50)
<223> n equals a,t,g, or c

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<222> (51)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (52)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (53)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (54)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (55)

<223> n equals a,t,g, or c

<400> 33

agtcccatcg atgagcaacc tcaactcttgt gtgcatcnnn nnnnnnnnnn nnnnn 55

<210> 34

<211> 17

<212> PRT

<213> Artificial Sequence

<220>

<221> signal

<223> Stanniocalcin signal peptide

<400> 34

Met Leu Gln Asn Ser Ala Val Leu Leu Leu Val Ile Ser Ala Ser
1 5 10 15

Ala

<210> 35

<211> 22

<212> PRT

<213> Artificial Sequence

<220>

<221> signal

<223> Synthetic signal peptide

<400> 35

Met Pro Thr Trp Ala Trp Trp Leu Phe Leu Val Leu Leu Leu Ala Leu
1 5 10 15

Trp Ala Pro Ala Arg Gly
20

<210> 36

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<221> primer_bind

<223> Degenerate VH forward primer useful for
amplifying human VH domains

<400> 36
 caggtgcagc tggcgcagtc tgg 23

<210> 37
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <221>primer_bind
 <223>Degenerate VH forward primer useful for
 amplifying human VH domains

<400> 37
 caggtcaact taaggagtc tgg 23

<210> 38
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <221>primer_bind
 <223>Degenerate VH forward primer useful for
 amplifying human VH domains

<400> 38
 gaggtgcagc tggcgcagtc tgg 23

<210> 39
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <221>primer_bind
 <223>Degenerate VH forward primer useful for
 amplifying human VH domains

<400> 39
 caggtgcagc tgcaggagtc ggg 23

<210> 40
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <221>primer_bind

<223>Degenerate VH forward primer useful for
amplifying human VH domains

<400> 40

gaggtgcagc tggtgcagtc tgc

23

<210> 41

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<221>primer_bind

<223>Degenerate VH forward primer useful for
amplifying human VH domains

<400> 41

caggtacagc tgcagcagtc agg

23

<210> 42

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<221>primer_bind

<223>Degenerate JH reverse primer useful for
amplifying human VH domains

<400> 42

tgaggagacg gtgaccaggg tgcc

24

<210> 43

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<221>primer_bind

<223>Degenerate JH reverse primer useful for
amplifying human VH domains

<400> 43

tgaagagacg gtgaccattg tccc

24

<210> 44

<211> 24

<212> DNA

<213> Artificial Sequence

<220>
 <221>primer_bind
 <223>Degenerate JH reverse primer useful for
 amplifying human VH domains

<400> 44
 tgaggagacg gtgaccaggg ttcc 24

<210> 45
 <211> 24
 <212> DNA
 <213> Artificial Sequence

<220>
 <221>primer_bind
 <223>Degenerate JH reverse primer useful for
 amplifying human VH domains

<400> 45
 tgaggagacg gtgaccgtgg tccc 24

<210> 46
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <221>primer_bind
 <223>Degenerate Vkappa forward primer useful for
 amplifying human VL domains

<400> 46
 gacatccaga tgaccacgac tcc 23

<210> 47
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <221>primer_bind
 <223>Degenerate Vkappa forward primer useful for
 amplifying human VL domains

<400> 47
 gatgttgtga tgactcagtc tcc 23

<210> 48
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <221>primer_bind
 <223>Degenerate Vkappa forward primer useful for
 amplifying human VL domains

<400> 48
 gatattgtga tgactcagtc tcc 23

<210> 49
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <221>primer_bind
 <223>Degenerate Vkappa forward primer useful for
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<400> 49
 gaaattgtgt tgacgcagtc tcc 23

<210> 50
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <221>primer_bind
 <223>Degenerate Vkappa forward primer useful for
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<400> 50
 gacatcgtga tgaccagtc tcc 23

<210> 51
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <221>primer_bind
 <223>Degenerate Vkappa forward primer useful for
 amplifying human VL domains

<400> 51
 gaaacgacac tcacgcagtc tcc 23

<210> 52
 <211> 23
 <212> DNA

<213> Artificial Sequence

<220>

<221>primer_bind

<223>Degenerate Vkappa forward primer useful for
amplifying human VL domains

<400> 52

gaaattgtgc tgactcagtc tcc

23

<210> 53

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<221>primer_bind

<223>Degenerate Vlamba forward primer useful for
amplifying human VL domains

<400> 53

cagtctgtgt tgacgcagcc gcc

23

<210> 54

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<221>primer_bind

<223>Degenerate Vlamba forward primer useful for
amplifying human VL domains

<400> 54

cagtctgccc tgactcagcc tgc

23

<210> 55

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<221>primer_bind

<223>Degenerate Vlamba forward primer useful for
amplifying human VL domains

<400> 55

tcctatgtgc tgactcagcc acc

23

<210> 56

<211> 23

<212> DNA
 <213> Artificial Sequence

 <220>
 <221>primer_bind
 <223>Degenerate Vlambda forward primer useful for
 amplifying human VL domains

 <400> 56
 tcttctgagc tgactcagga ccc 23

 <210> 57
 <211> 23
 <212> DNA
 <213> Artificial Sequence

 <220>
 <221>primer_bind
 <223>Degenerate Vlambda forward primer useful for
 amplifying human VL domains

 <400> 57
 cacgttatac tgactcaacc gcc 23

 <210> 58
 <211> 23
 <212> DNA
 <213> Artificial Sequence

 <220>
 <221>primer_bind
 <223>Degenerate Vlambda forward primer useful for
 amplifying human VL domains

 <400> 58
 caggctgtgc tcactcagcc gtc 23

 <210> 59
 <211> 23
 <212> DNA
 <213> Artificial Sequence

 <220>
 <221>primer_bind
 <223>Degenerate Vlambda forward primer useful for
 amplifying human VL domains

 <400> 59
 aattttatgc tgactcagcc cca 23

 <210> 60

<211> 24
 <212> DNA
 <213> Artificial Sequence

 <220>
 <221>primer_bind
 <223>Degenerate Jkappa reverse primer useful for
 amplifying human VL domains

 <400> 60
 acgtttgatt tccaccttgg tccc 24

 <210> 61
 <211> 24
 <212> DNA
 <213> Artificial Sequence

 <220>
 <221>primer_bind
 <223>Degenerate Jkappa reverse primer useful for
 amplifying human VL domains

 <400> 61
 acgtttgatc tccagcttgg tccc 24

 <210> 62
 <211> 24
 <212> DNA
 <213> Artificial Sequence

 <220>
 <221>primer_bind
 <223>Degenerate Jkappa reverse primer useful for
 amplifying human VL domains

 <400> 62
 acgtttgata tccactttgg tccc 24

 <210> 63
 <211> 24
 <212> DNA
 <213> Artificial Sequence

 <220>
 <221>primer_bind
 <223>Degenerate Jkappa reverse primer useful for
 amplifying human VL domains

 <400> 63
 acgtttgatc tccaccttgg tccc 24

<210> 64
 <211> 24
 <212> DNA
 <213> Artificial Sequence

 <220>
 <221>primer_bind
 <223>Degenerate Jkappa reverse primer useful for
 amplifying human VL domains

 <400> 64
 acgtttaatc tccagtcgtg tccc 24

 <210> 65
 <211> 23
 <212> DNA
 <213> Artificial Sequence

 <220>
 <221>primer_bind
 <223>Degenerate Jlamba reverse primer useful for
 amplifying human VL domains

 <400> 65
 cagtctgtgt tgacgcagcc gcc 23

 <210> 66
 <211> 23
 <212> DNA
 <213> Artificial Sequence

 <220>
 <221>primer_bind
 <223>Degenerate Jlamba reverse primer useful for
 amplifying human VL domains

 <400> 66
 cagtctgccc tgactcagcc tgc 23

 <210> 67
 <211> 23
 <212> DNA
 <213> Artificial Sequence

 <220>
 <221>primer_bind
 <223>Degenerate Jlamba reverse primer useful for
 amplifying human VL domains

 <400> 67
 tcctatgtgc tgactcagcc acc 23

<210> 68
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<221>primer_bind
<223>Degenerate Jlambda reverse primer useful for
amplifying human VL domains

<400> 68
tcttctgagc tgactcagga ccc

23

<210> 69
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<221>primer_bind
<223>Degenerate Jlambda reverse primer useful for
amplifying human VL domains

<400> 69
cacgttatac tgactcaacc gcc

23

<210> 70
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<221>primer_bind
<223>Degenerate Jlambda reverse primer useful for
amplifying human VL domains

<400> 70
caggctgtgc tcactcagcc gtc

23

<210> 71
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<221>primer_bind
<223>Degenerate Jlambda reverse primer useful for
amplifying human VL domains

<400> 71

aattttatgc tgactcagcc cca

23

<210> 72

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<221>turn

<223>Linker peptide that may be used to join VH
and VL domains in an scFv.

<400> 72

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
1 5 10 15

<210> 73

<211> 733

<212> DNA

<213> Homo sapiens

<400> 73

gggatccgga gcccaaactct tctgacaaaa ctcacacatg cccaccgtgc ccagcacctg	60
aattcgaggg tgcaccgtca gtcttcctct tcccccaaa acccaaggac accctcatga	120
tctcccggaac tcctgaggtc acatgcgtgg tgggtggacgt aagccacgaa gaccctgagg	180
tcaagttcaa ctggtacgtg gacggcgtgg aggtgcataa tgccaagaca aagccgcggg	240
aggagcagta caacagcacg taccgtgtgg tcagcgtcct caccgtcctg caccaggact	300
ggctgaatgg caaggagtac aagtgcagg tctccaacaa agccctccca acccccatcg	360
agaaaaccat ctccaaagcc aaagggcagc cccgagaacc acaggtgtac accctgcccc	420
catcccggga tgagctgacc aagaaccagg tcagcctgac ctgcctggtc aaaggcttct	480
atccaagcga catcgccgtg gagtgggaga gcaatgggca gccggagaac aactacaaga	540
ccacgcctcc cgtgctggac tccgacggct ccttcttcct ctacagcaag ctcaccgtgg	600
acaagagcag gtggcagcag gggaaagtct tctcatgctc cgtgatgcat gaggctctgc	660
acaaccacta cacgcagaag agcctctccc tgtctccggg taaatgagtg cgacggccgc	720
gactctagag gat	733

<210> 74

<211> 5

<212> PRT
<213> Artificial sequence

<220>
<221> misc_structure
<223> membrane proximal motif of class 1 cytokine receptors

<220>
<221> misc_feature
<222> (3)
<223> Xaa equals any

<400> 74
Trp Ser Xaa Trp Ser
1 5

<210> 75
<211> 86
<212> DNA
<213> Artificial Sequence

<220>
<221> primer_bind
<223> forward primer useful for generation of a synthetic gamma
activation site (GAS) containing promoter element

<400> 75
gcgcctcgag atttccccga aatctagatt tccccgaaat gatttccccg aaatgatttc 60
cccgaaatat ctgccatctc aattag 86

<210> 76
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<221> primer_bind
<223> reverse primer useful for generation of a synthetic gamma
activation site (GAS) containing promoter element

<400> 76
gcggcaagct ttttgcaaag cctaggc 27

<210> 77
<211> 271
<212> DNA
<213> Artificial Sequence

<220>

<221> misc_feature
 <223> Synthetic GAS-SV40 promoter sequence

<400> 77
 ctcgagattt ccccgaaatc tagatttccc cgaaatgatt tccccgaaat gatttccccg 60
 aaatatctgc catctcaatt agtcagcaac catagtcccc cccctaactc cgcccatccc 120
 gccctaact ccgcccagtt ccgcccattc tccgcccacat ggctgactaa ttttttttat 180
 ttatgcagag gccgaggccg cctcggcctc tgagctattc cagaagtagt gaggaggctt 240
 ttttgagggc ctaggctttt gcaaaaagct t 271

<210> 78
 <211> 32
 <212> DNA
 <213> Artificial Sequence

<220>
 <221> primer_bind
 <223> primer useful for generation of a EGR/SEAP reporter construct

<400> 78
 gcgctcgagg gatgacagcg atagaacccc gg 32

<210> 79
 <211> 31
 <212> DNA
 <213> Artificial Sequence

<220>
 <221> primer_bind
 <223> primer useful for generation of a EGR/SEAP reporter construct

<400> 79
 gcgaagcttc gcgactcccc ggatccgcct c 31

<210> 80
 <211> 12
 <212> DNA
 <213> Artificial Sequence

<220>
 <221> misc_binding
 <223> NF-KB binding site

<400> 80
 ggggactttc cc 12

<210> 81
 <211> 73
 <212> DNA
 <213> Artificial Sequence

<220>
 <221> primer_bind
 <223> forward primer useful for generation of a vector containing the
 NF-KB promoter element

<400> 81
 gcggcctcga ggggactttc ccggggactt tccggggact ttccgggact ttccatcctg 60
 ccatctcaat tag 73

<210> 82
 <211> 256
 <212> DNA
 <213> Artificial Sequence

<220>
 <221> misc_feature
 <223> Synthetic NF-KB/SV40 promoter

<400> 82
 ctcgagggga ctttcccggg gactttccgg ggactttccg ggactttcca tctgccatct 60
 caattagtca gcaaccatag tcccgccct aactccgcc atcccgcccc taactccgcc 120
 cagttccgcc cattctccgc cccatggctg actaattttt tttatttatg cagaggccga 180
 ggccgcctcg gcctctgagc tattccagaa gtagtgagga ggcttttttg gaggcctagg 240
 cttttgcaaa aagctt 256